Geophysical Research Abstracts
Vol. 14, EGU2012-13679, 2012
EGU General Assembly 2012

How can LCA approaches contribute to improve geo-cycles management

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Climate change and land use have become a major challenge for mankind and the natural environment. Greenhouse gas (GHG) emissions released into the atmosphere in ever rapidly growing volumes are most likely to be responsible for this change. Carbon dioxide gas (CO_2) is suggested to be the main cause of global warming.
Carbon reduction is the key to preventing this, for example, by enhancing energy efficiency and mitigating carbon emissions by means of green energy and adjusting the use of natural resources. Different activities produce distinguish impacts, and each product generates specific impacts on nature.
The impact of man activities in the geo-cycles is of paramount importance in what concerns long term sustainability. Nevertheless, the environmental and sustainability impacts of different approaches and techniques of ecosystem management is a difficult question that can be assessed using LCA techniques
LCA is a technique to assess environmental impacts associated with all the stages of a product's life from-cradle-to-grave. Based on that, LCA can be effective in supporting the assessment of decision making on complex sustainability issues because it can integrate the diversity of impacts categories guise and it can be adapted to a large variety of contexts. By incorporating quantitative data LCA allows decision makers to include a full range of economic, environmental, social and technical criteria.
The integrated framework is configured such that the pros and cons of alternative environmental and energy strategies can be measured in terms of their ability to achieve the overall goals and objectives of the sustainable development, while satisfying the pollution control requirements.
Because it is holistic, integrate and dynamic, this approach represents a state of the art tool for enhance the sustainable development of a sector, allowing a more transparent and participated management, a basic instrument for improved competitiveness.
This approach may serve as a basis for prioritizing industrial technologies, procedures or materials, based on the reduction of impacts.
The ECODEEP project intents to contribute to the competitiveness of the national agri-food sector in particular the Central Region of Portugal. Through the development of eco-efficiency tools it allows a more careful management of inputs, optimizing consumption energy and raw materials. ECODEEP seeks to improve the performance of the sector, allowing an improvement of production processes and a reduction of the investment on end-of-line solutions, therefore reducing products costs, which become more competitive, while reducing the impact on geo-cycles and the ecosystems.
The overall purpose of this paper is, based on a case study, discuss the use of LCA approach to improve overall competitiveness while reducing the impact over the geo-cycles and the environment in general.